HAZARD ANALYSIS

Work Plan
Flame cutting steel outdoors (Numi upgrade samples)
Date:
October, 2007
Prepared By:
David Erickson
Reviewed By: (Optional)

Approved By: (Supervisor or Task Manager)
Dave Erickson

Description of work: Flame cutting steel plates using appropriate method for thickness of steel to be cut. Material is cut outdoors, West side of MAB on hardstand.

Personal Protective Equipment: (Check protective equipment required for the job.)

x	Safety Glasses with Side Shields	x	Protective outwear used for cutting steel
x	Hearing Protection		Hard Hats
x	3.0 Braising Goggles		Impact Goggles
	Face Shield		Rubber Apron
x	Leather Gloves		Hot/Cold Thermal Protective Gloves
x	Fire extinguisher		Respirators
	Other (Specify)	x	Ground fault protection

Equipment required for the job: (List the tools needed to perform the job.)
MAP gas tank, 12 pack of Oxygen. cutting torch with regulators and hoses, fork trucks, squares, tape measures, cribbing, crow bar, Oxy/Acetylene torch assembly.

Work Plan History Information: (List any lessons learned accidents from this job, tips from previous jobs).
This job has been preformed many times over 30 years. We have cut anywhere from ½ inch thick steel to 17 inches thick. The welder and technician performing task have done this many times together over a 5 year period.
Once, a few years back a job requiring a long piece of steel (roughly18 feet, x 9 inch thick and 50 inches wide) was cut length wise. In this case, the material closed up behind cut all the way to near the end. Stored energy built up in this remaining steel and fractured. This had the potential to hurt or kill someone if they were standing close to steel when it parted. The steel blocks

jumped off cribbing used to support it from stored energy that released. Long cutting needs to be watched closely and if material starts to close behind cut, it must be stopped and evaluated. We found that this is a very rare (only saw it once) occurrence as typically the cut behind torch will open instead of closing. However, we must always keep an eye on this in case this should happen again. Shorter cuts don't have enough travel to allow steel to open or close behind cut to cause this occurrence. We still need to keep an eye on this.

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Step	Description	Hazards	Precautions / Safety Procedures
1	Prepare area and equipment for cutting steel outdoors. Two man rule applies.	Pinch fingers, back strains, fork truck traffic.	Clear area and setup cribbing. Wear gloves for handling cribbing and other equipement. Use forktruck to move cribbing into desired area and then carefully move by hand into final position. Move steel onto cribbing with fork truck. Setup flame cutting equipment. Make sure all hoses, regulators, and torches are in good working condition.
2	Setup and start of cutting material	Burns, electrical shock, clear area,	Proper PPE for cutting of steel is mandatory. Use of leather feet protectors, gloves, proper brazing safety glasses, ground fault to mule, fire extinguisher, stay clear of metal being cut.
3	Things to do and watch for during flame cutting process	Burns, falling metal, molten metal spray, electrical cord, gas hoses	Stay clear of molten metal spray being sprayed about. Watch electrical cords and gas lines for pinching and/or burning from molten spray. Stay clear of large long cutting steel in case material starts to close behind cut that may cause metal in front of cut to store energy and pop apart. Always watch metal blocks when cutting through the end of cut in case metal falls off cribbing if not properly placed.
4	Other concerns for particular task.	Radioactive (low class) materials being cut.	Make sure Rad. tech. personnel is in loop and has approved all work being done to insure no contamination. Have material checked for Radioactivity. Dispose of any Radioactive material in proper barrels as needed.
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My supervisor has reviewed this hazard analysis with me and I understand the hazards and required precautionary actions. I will follow the requirements of this hazard analysis or notify my supervisor if I am unable to do so. I understand that there are Environmental, Safety and Health Professionals on staff if I need further assistance or clarification.

Name and ID (please print)	Signature	Date
LEONARD T. HARBACEK	[redacted]	10-15-07
BLASZYNSKI WOJCIECH	[redacted]	10-15-07